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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/563,141

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Paul William Lefley

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EXAMINER

RAMADAN, RAMY O

ART UNIT

PAPER NUMBER

2838

NOTIFICATION DATE

DELIVERY MODE

04/21/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOCommunications@hoffmanwarnick.com

Office Action Summary	Application No. 10/563,141	Applicant(s) LEFLEY ET AL.	
	Examiner RAMY RAMADAN	Art Unit 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Amendments

Acknowledgement is made of amendment filed March 04, 2009.

Response to Arguments

Applicant's arguments filed March 04, 2009 have been fully considered but they are not persuasive.

In response to Applicant's argument regarding claims 1 and 22 that:

"Applicants further contend that claim 1 is not obvious in view of Momotani.....

Additionally, Applicants request that rejections of similarly recited claim 22 be withdrawn in light of the above arguments (Page 10)." (Emphasis added).

The examiner respectfully disagrees and submits that although Momotani discloses a constant pulse duration, the value of the constant pulse generation could be any value between 50 to 1000 microseconds. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the charging current varies with state of charge, the duration of the charging current pulses is not constant or the duration of the pulses varies between the range of 50 to 1000 microseconds) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4, 7, 9, 19, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Momotani et al. (US 5,614,804), hereinafter Momotani.

As per claims 1, 2, 4 and 9, Momotani discloses (Col. 4, lines 52-67 and Col. 5, lines 1-27) and shows in Fig. 2, an apparatus for charging a secondary battery by supplied pulsed current as charging current comprising:

a DC/DC converter (48) (power converter) connectable to the secondary battery (30);
and

a pulse generator (42) connectable to the DC/DC converter (48), the pulse generator triggers the DC/DC converter (48) to generate positive pulses of current for passing through the secondary battery (30) causing charging (electrochemical conversion) in the secondary battery (30);

the pulse generator (42) is further arranged to generate a negative discharge pulse to occur either before or after one or more of the positive pulses.

But Momotani does not explicitly disclose generating pulses of current having a duration of between around 50 to around 1000 microseconds, wherein the pulses of current have an amplitude around one hundred times the amplitude of current required to charge or discharge completely the available capacity of the battery over a twenty hour period (C.sub.20 charge) and

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wherein the battery has a settling time of between around 1 to 10 milliseconds to produce a duty cycle of between around 1:10 to around 1:200. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device as discloses by Momotani to generate pulses of current having a duration of between around 50 to around 1000 microseconds, wherein the pulses of current have an amplitude around one hundred times the amplitude of current required to charge or discharge completely the available capacity of the battery over a twenty hour period (C.sub.20 charge) and wherein the battery has a settling time of between around 1 to 10 milliseconds to produce a duty cycle of between around 1:10 to around 1:200, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

As per claim 7, Momotani shows in Fig. 6, the pulses of current having a substantially constant pulse width, while the pulse width is controlled by the DC/DC converter (48).

As per claim 19, Momotani discloses and shows in Figs. 1 and 6, that the pulse generator (42) and the DC/DC converter (48) produce negative current pulses between the positive current pulses. But Momotani does not disclose two pulse generators and two converters for producing positive and negative pulses, however, Momotani discloses a single pulse generator (42) and a single converter (48) for performing the two functions. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have two pulse generators and two converters for producing positive and negative pulses, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.

As per claim 20, Momotani shows in Fig. 6 that the negative current pulse(s) (62) have an energy content and the positive current pulse(s) (61) have an energy content, the energy

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content of the negative current pulse(s) (62) being less than the energy content of the positive current pulse(s) (61).

As per claim 22, the method merely recites the steps of using the elements of the device as disclosed above and since each element must be present to perform the steps, the method as claimed would be obvious in view of the device as disclosed by Momotani.

Claims 3, 6 and 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Momotani, in view of Feldsteln (US 5,621,297).

Momotani discloses the claimed invention except for the electrochemical device being a primary cell or a lead-acid battery.

However, Feldsteln discloses an apparatus for pulse charging and discharging of a dry primary cell or a lead-acid battery (Abstract and Col. 2, lines 1-3 and lines 36-65).

One of ordinary skill in the art would have recognized that the types of secondary cells and primary cells are known equivalent in the art for providing electrical power.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device as disclosed by Momotani to substitute a secondary cell for a primary cell or a different type of secondary cell resulting in the predictable result of charging and discharging to provide electrical power.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Momotani, in view of Maurer (US 6,179,984).

Momotani discloses the claimed invention except for the electrochemical device being an electroplating apparatus.

However, Maurer discloses a circuit for supplying pulsed current in electroplating systems (Abstract).

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It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device as disclosed by Momotani, to have an electroplating apparatus or system to improve the properties of the electroplate layers as a result of pulse charging (Col. 1, lines 1-18).

Claims 10-18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Momotani, in view of Fazakas (US 6,479,969).

Momotani discloses the claimed invention except for that the power converter comprises at least two inductors and at least two capacitors to form two or more series resonant circuits in parallel, arranged such that the currents in the inductors are unidirectional and the currents in the capacitors are bidirectional, the windings of the at least two inductors are wound on a single core, wherein a first further winding is arranged on the core to form a step-down transformer, wherein the further winding is arranged to provide unidirectional current pulses to the electrochemical device via a rectifying diode and a second further winding arranged on the core to form a demagnetization winding, while firing current pulses are produced for a number of thyristors (Th) to control the charging and discharging of the resonant circuit(s) by switching between components of the resonant circuit(s).

However, Fazakas shows in Figs. 1a-1c, 6, 7 and 9, a circuit arrangement for pulsated charging of a battery (B) comprising:

at least two inductors and at least two capacitors (C1, C2) to form two series resonant circuits in parallel, arranged such that the currents in the inductors are unidirectional and the currents in the capacitors are bidirectional, the windings of the at least two inductors are wound on a single core (TR1), wherein the first winding is arranged on the core to form a step-down transformer (TR1), wherein the first winding is arranged to provide unidirectional current pulses to the battery (B) via a rectifying diode of a rectifier (Gr) and the second winding arranged on the

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core to form a demagnetization winding, while firing current pulses are produced for a number of thyristors (Th) to control the charging and discharging of the resonant circuit(s) by switching between components of the resonant circuit(s) (Col. 1, lines 19-57 and Col. 5, line 37-Col. 6, line 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device as disclosed by Momotani to use the circuit as taught by Fazakas to provide a more favorable charging method and to improve the battery parameters (Col. 2, lines 44-49).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAMY RAMADAN whose telephone number is (571) 272-9761. The examiner can normally be reached on Mon-Fri 7:30 am-5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on (571) 272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Akm Enayet Ullah/
Supervisory Patent Examiner, Art Unit 2838

/Ramy Ramadan/
Examiner
Art Unit 2838

/RR/